

# CorrTran™

## Corrosion Monitoring



### Description

This transmitter will monitor general or localized corrosion (pitting) through a 4-20mA signal and HART® protocol in real time. The corrosion rate or a pitting factor is available as a standard 2-wire 4-20mA process variable. The probe is available in a three-electrode configuration with a wide selection of different probe types and electrode materials.

### Function

The CorrTran™ instrument utilizes state-of-the-art algorithms and data analysis techniques to accurately measure corrosion rate or pitting. Harmonic distortion analysis (HDA) is applied to improve the performance of the industry accepted linear polarization resistance (LPR) technique used to measure corrosion rate. To further enhance the performance, an application specific Stern Geary variable (B value) can be stored in the transmitter. During the 7-minute measurement cycle, CorrTran also performs an automated electrochemical noise (ECN) measurement, which in combination with the corrosion rate data can provide a measurement of localized corrosion (pitting). At the completion of each measurement cycle, the respective corrosion rate or pitting value in the form of a 4-20mA/HART signal is produced and made available to the plant personnel.

### Technical Data

#### Electrical

Supply Voltage:	9-30VDC
Rated Operating Voltage:	9VDC min. at max. loop current 2-wire (4-20mA)
Max Load with 24VDC Power Supply:	680Ω with high alarm capability 750Ω without high alarm
Linearity:	0.0015% non linear
Resolution:	17 bit
B Value (default):	25.6mV

### Mechanical Properties

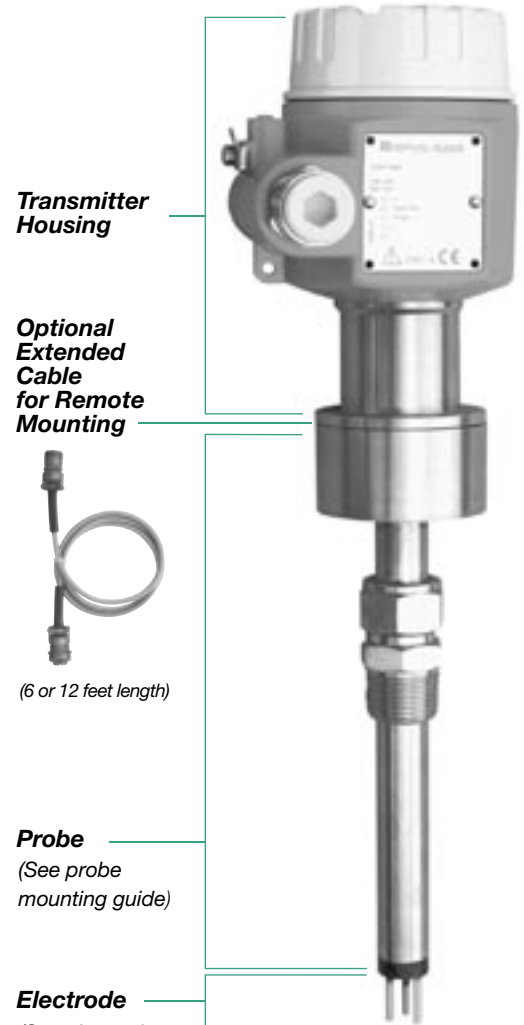
#### Housing

Protection:	Type 4X
Enclosure Material:	Aluminum
Process Connection:	3/4" NPT
Electrical Connection:	3/4" NPT
Weight (transmitter housing):	1.1 lb (500 g)
Operating Temperature:	-40°F to +158°F (-40°C to +70°C)

#### Process Conditions

Flow in Liquids (max.)	20 fps (6.1 m/sec.)
Process Temperature (max.)	
316 Stainless Steel Probe	
Direct Mount:	250°F (121°C)
Remote Mount:	500°F (260°C)
Glass Epoxy Probe:	150°F (65°C)
Process Pressure (Max.)	
316 Stainless Steel Probe:	1500 psi (102 bar)
Glass Epoxy Probe:	100 psi (7 bar)
O-Ring (set of 3)	Viton®

(Viton® is registered trademarks of DuPont Dow Elastomers)



**Transmitter Housing**

**Optional Extended Cable for Remote Mounting**



(6 or 12 feet length)

**Probe**  
(See probe mounting guide)

**Electrode**  
(See electrode materials guide)

- On-line Corrosion Monitoring
- 2-wire 4-20mA Transmitter, HART® Interface
- General or Localized Corrosion (Pitting) Monitoring
- Withstands 1500 psi (102 bar) Process Pressure
- Custom Configuration

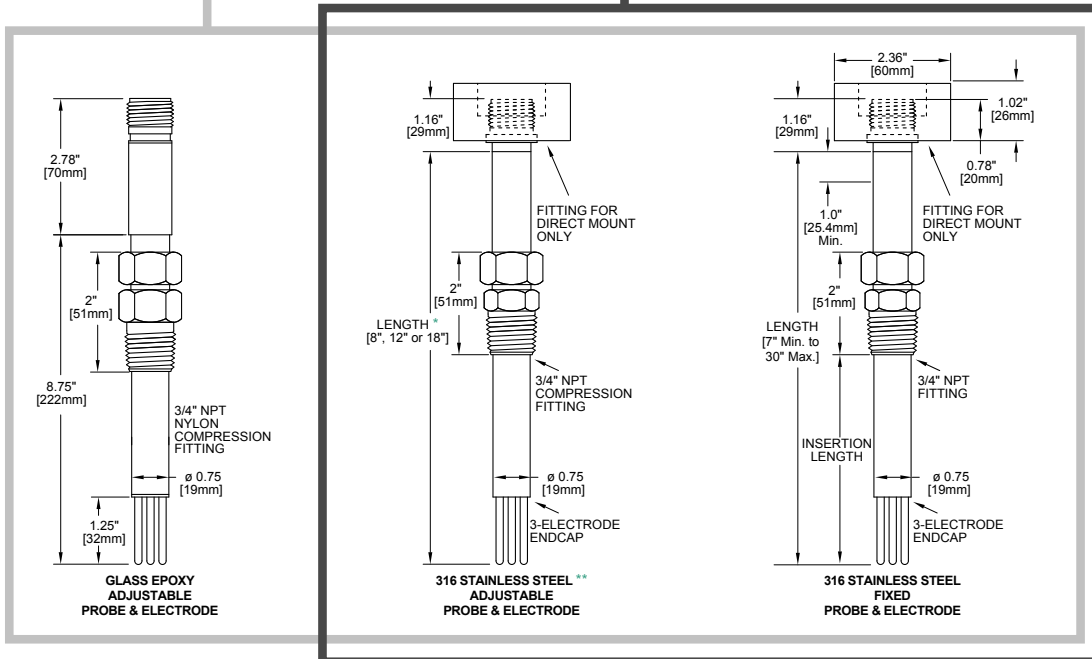
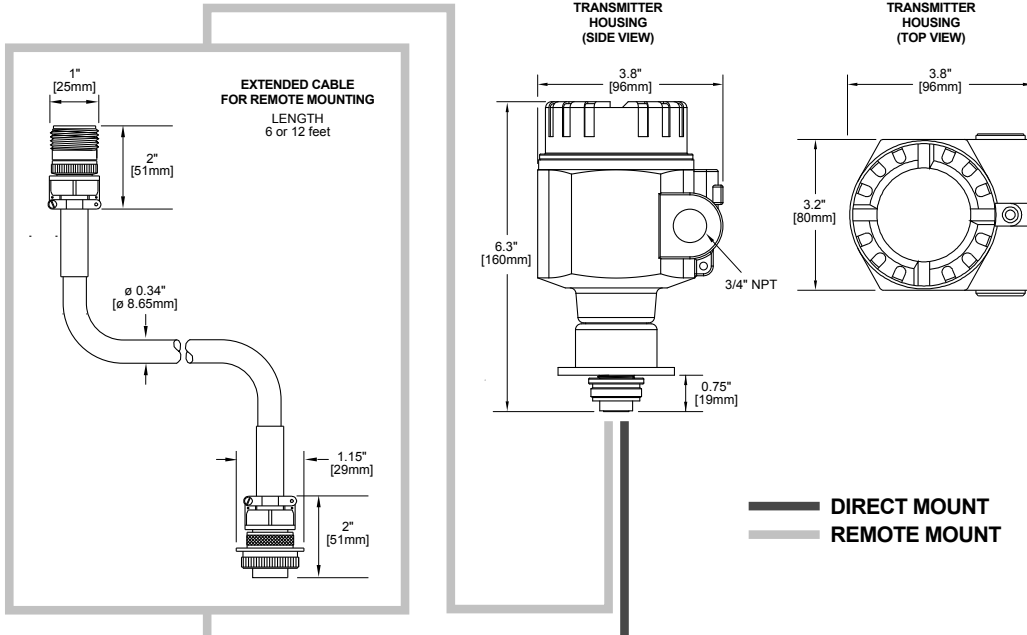
Information subject to change, consult factory for details.

Date of issue 8/26/2004

# CorrTran™ – Product Data Sheet

## Housing Dimensions and Connection Diagram

### Housing Dimensions



**NOTE:**

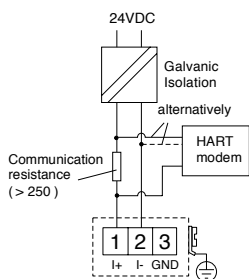
\* Standard lengths are 8", 12" and 18". Other lengths are available in increments of 0.5" or 10 mm. Minimum length is 7.0" or 170 mm and the maximum length is 30.0" or 770 mm. Insertion lengths for fixed probes are specified in 0.2" or 5 mm increments.

\*\* All adjustable probes include a safety retaining bracket which must be used in all pressurized applications.

### Connection Diagram

**2-wire connection with HART (DC)**

4-20mA with HART



### Setup

Corrosion Reading: Update time 7.2 min (fixed)

The adjustments and scaling can be done using a hand held HART® calibrator or Pactware™ software. See the table below for scaling information:

**General Corrosion Rate**

Range	
Min.	20 mils/year
Max.	400 mils/year
Default	40 mils/year
Zero/Span Adjustments Available with HART®	

**Localized Corrosion (Pitting) Factor**

Default:	0.001 - 1.0
Low Pitting:	0.001 - 0.01
Average Pitting:	0.01 - 0.1
High Pitting:	0.1 - 1.0

## Key To Model Number

CMC - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] - 0 [ ] - A 2 I H - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

**Corrosion Type**  
**G** - General Corrosion  
**P** - Localized Corrosion (Pitting)

**Process Connection**  
**N21** - 3/4" NPT, 316L  
**NP3** - 3/4" NPT, nylon adj. fitting  
**A31** - 1", 150 lb flange  
**A32** - 1", 300 lb flange

*Note: Other connections are available, contact P+F for information*

**Measurement / Probe Material**  
**CB** - Inches, 316L  
**CF** - Inches, epoxy Glass  
**DB** - mm, 316L  
**DF** - mm, epoxy Glass

**Probe Mounting**  
**A thru F** (see table below)

**Probe Length**  
 min: 7" (170 mm), max: 30" (770 mm) Probe lengths can be specified in .5" or 10 mm increments.

Code	Inches	Code	mm
070	7.0	170	170
075	7.5	180	180
⋮	⋮	⋮	⋮
295	29.5	760	760
300	30.0	770	770

**Electrode Material**  
**0A thru 0Q** (see table below)

**Insertion Length (fixed probes only)**  
 min: 7" (170 mm), max: 30" (770 mm)  
 Insertion lengths can be specified in 0.2" or 5 mm increments.

Code	Inches	Code	mm
050	5.0	130	130
052	5.2	135	135
⋮	⋮	⋮	⋮
278	27.8	705	705
280	28.0	710	710

*Note: This information is required for all fixed probes.*

**Approvals**  
**GP** - General Purpose  
**D2** - Division 2

**Transmitter Mount**  
**1** - Direct  
**2** - Remote (6 feet)  
**3** - Remote (12 feet)  
**4** - Special

**Electrical Output**  
**IH** - 4 to 20mA with HART

**Housing Type**  
**A2** - Aluminum 3/4" electrical

## Probe Mounting Guide

Key#	Probe Type	Mounting	Process Connection	Probe Material
A	Standard	Direct Mount	Fixed	Stainless Steel
B	Standard	Remote Mount	Fixed	Stainless Steel
C	Standard	Direct Mount	Adjustable	Stainless Steel
D	Standard	Remote Mount	Adjustable	Stainless Steel
E	Retractable*	Remote Mount	Adjustable	Stainless Steel
F	Special*	-	-	-

\* Consult Factory

## Electrode Material Guide

Key#	UNS #	Electrode Material	Key#	UNS #	Electrode Material
0A	G10180	1018 Carbon Steel	0J	C11000	CDA 110ETP 99.9 Cu
0B	K03005	A53 Grade B Carbon Steel	0K	C70610	CDA706 (Cu/Ni 90/10)
0C	S30400	AISI 304	0L	C68700	CDA687 (Al Brass)
0D	S30403	AISI 304L	0M	C44300	CDA443 (ARS AD. Brass)
0E	S31600	AISI 316	0N	A91100	Aluminum 1100
0F	S31603	AISI 316L	0O	A92024	Aluminum 2024
0G	N08020	Carpenter 20 Cb3	0P	R50400	Titanium GR2
0H	N04400	Monel 400	0Q	N10276	Hastelloy C-276
0I	C71500	CDA 715 (Cu/Ni 70/30)			

Other materials are available upon request.

# CorrTran™ – Product Data Sheet

## Intrinsically Safe Isolators and Signal Conditioner

Each CorrTran requires either a signal conditioner or an isolated IS barrier (see manual for details). Pepperl+Fuchs recommends the following isolators shown below.

<b>KFD2-STC4-1</b>	1-channel Non-IS signal conditioner
<b>KFD2-STC4-1.20</b>	1-input 2-output Non-IS signal conditioner
<b>KFD2-STC4-EX1</b>	1-channel IS isolator
<b>KFD2-STC4-EX2</b>	2-channel IS isolator
<b>KFD2-STC4-EX1.20</b>	1-input 2-output IS isolator
<b>KFU8-CRG-1.D</b>	4-20 mA, Non-IS limit alarm
<b>KFU8-CRG-EX1.D</b>	4-20 mA IS limit alarm

## HART® Accessories

P+F offers a wide variety of HART multiplexers and termination boards for wiring to a PLC or DCS system. The multiplexers are available in 16 and 32 channel versions.

16-channel Multiplexer	
<b>KFD2-HMM-16</b>	16-channel MUX master
<b>KFD0-HMS-16</b>	16-channel slave

32-channel Multiplexer	
<b>HIS2700</b>	32-channel MUX

Adapter	
<b>US-HI-311</b>	HART to RS 232 interface
<b>US-HI-321</b>	HART to USB interface

## Surge Protection

For installations requiring surge or lightning protection, the following surge barriers can be used in conjunction with the isolators and signal conditioners listed above.

<b>K-LB-1.30</b>	1-channel SafeZap surge barrier
<b>K-LB-2.30</b>	2-channel SafeZap surge barrier
<b>FN-LB-I</b>	1-channel screw in type surge barrier for field mounting
<b>P-LB-1</b>	Single channel surge barrier for use with K-system isolators
<b>P-LB-2</b>	Dual channel surge barrier for use with K-system isolators

## Additional Accesories

<b>PW2-BASIC</b>	CorrTran interface demo software on CD-ROM
<b>CMC-PMB-01</b>	Wall or pipe mounting bracket for remote mounted transmitters



The GreenTeam is P+F's network of experts dedicated to providing customized process solutions.



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